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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 09/419,798 | 10/18/1999 | TOSHIHIKO MIURA | 1004.1063/JD | 1817 |

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| EXAMINER | |
|---|---|
| JACKSON, MONIQUE R | |

| ART UNIT | PAPER NUMBER |
|---|---|
| 1773 | |

DATE MAILED: 06/24/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 09/419,798 | KAWASAKI ET AL. | |
| | Examiner | Art Unit | |
| | Monique R Jackson | 1773 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *28 March 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1-9* is/are pending in the application.

4a) Of the above claim(s) *8* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-7 and 9* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

## DETAILED ACTION

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 3/28/05 has been entered. New Claim 9 has been added. Claims 1-9 are pending in the application. Claim 8 has been withdrawn from consideration.

2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

### *Claim Rejections - 35 USC § 112*

3. Claims 1-7 and 9 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 1 recites the limitation "a filling material...mixed with particles of a powdered thermosetting resin, then filled in depressions between powdered magnetic particles being said rare earth-transition metal alloy powder on a surface of said magnet" however it is unclear what is "being said rare earth-transition metal alloy powder on a surface of said magnet". Is it the magnetic particles? The filling material?

### *Claim Rejections - 35 USC § 103*

4. Claims 1-7 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sagawa et al in view of Nakayama et al (USPN 5,154,978) for the reasons recited previously and restated below. With respect to new Claim 9, the Examiner notes that the limitation "by ball milling" is a

product-by-process limitation that does not appear to materially affect the structure of the final product and hence, the product as taught by Sagawa et al in view of Nakayama et al still reads upon the instant claim.

5. Sagawa et al teach the production of a resin-bonded rare-earth magnet coated with a powder layer and resin layer wherein the magnet is formed from Fe-Nd-B powder having a particle size of 100μm or less mixed with an epoxy resin and compacted under pressure to produce a resin-bonded magnet (Abstract; Example 5.) The magnet is coated with a resin and a compacted powder layer, wherein the resin is a thermosetting resin and the grain size of the powder material (*filling material*) depends of the size of the work piece to be coated, the thickness of the coating, and the material of the powder, and **the grain size is usually within a range from 0.05 to 500μm, and more preferably 0.1 to 50μm wherein the finer the powder material is, the smaller the striking force is and the surface roughness is lessened** (Col. 6, lines 5-12; Col. 13, lines 53-69.) The resin layer is preferably applied first to bind the powder layer to the surface of the work piece however it is possible to impregnate the resin from outside the powder coating into the continuous clearances of the powder skeleton structures (Col.8, lines 1-13.) Sagawa et al teach that **the powder material and resin are forced into the pores of the resin-bonded magnet, thereby effectively sealing the pores on the surface of the magnet and providing an improved corrosion resistant surface coating** (*hence "filled in depressions" of the magnet body formed from "powdered magnetic particles"*; Col. 10, lines 5-23.) A protective resin coating may also be applied on the surface of the coating to enhance the strength and corrosion resistance of the entire coating and smoothen and enhance the appearance of the coating surface wherein the protective coating layer comprises the same resin as the coating layer

such as a thermosetting resin and has a thickness desirably from 0.5 to 300μm (Col. 9, lines 20-46.) **It is particularly noted that Sagawa et al specifically teach that the powder layer can be applied first followed by impregnation of the resin layer, that the powder material and resin are forced into the pores of the resin-bonded magnet thereby effectively sealing the pores on the surface of the magnet and providing an improved corrosion resistant surface coating (*a filling material used to fill in depressions on a surface of said magnet and fixed with thermosetting resin*)** and that a protective resin coating may also be applied on the surface of the coating to enhance the strength and corrosion resistance of the entire coating and smoothen and enhance the appearance of the coating surface wherein the protective coating layer comprises the same resin as the coating layer such as a thermosetting resin (*a corrosion inhibiting coat made from a synthetic resin applied to the surface*) and has a thickness desirably from 0.5 to 300μm.

6. Though Sagawa et al teach that the finer the powder materials, the smaller the striking force and lower the surface roughness, and that the protective coating assists in smoothening the surface of the magnet, Sagawa et al do not teach the surface roughness of the magnet as instantly claimed. However, it is noted that with regards to resin-bonded magnets, the surface roughness is an important characteristic of the performance of the magnet with regards to corrosion resistance of the magnet as taught by Nakayama et al wherein an improvement in corrosion resistance can be obtained by reducing the surface roughness of the magnet (Col. 2, lines 50-60.) Nakayama et al further teach that a surface roughness of about 1 micron or less is preferred (Col. 2, lines 54-60.) Therefore, one having ordinary skill in the art at the time of the invention would have been motivated to provide the surface of the magnet taught by Sagawa et al with a small

surface roughness, preferably less than one micron, because, as taught by Nakayama et al, a decrease in surface roughness provides improved corrosion resistance. Alternatively, it would have been obvious to one having ordinary skill in the art to determine the optimum surface roughness to provide desired improvement in corrosion resistance for the invention taught by Sagawa et al utilizing routine experimentation to determine the optimum powder material size to provide the desired surface roughness.

7. Claims 1-7 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sagawa et al in view of Nakayama et al as discussed above and in further view of Strnat for reasons recited previously and restated below.

8. The teachings of Sagawa et al in view of Nakayama et al are discussed above. Though Sagawa et al teach particle sizes of the metal alloy powder and the filler material particles that encompass or overlap the instantly claimed ranges, Sagawa et al do not specifically teach limiting the particle size of the metal alloy powder and the filler material particles to 20-300μm and 0.1-15μm, respectively. Sagawa et al further teach that the particle size of the powder material is based on the size of the work piece, the thickness of the coating, and the material of the powder and is also a result-effective variable that affects the surface properties of the resulting coated product. Further, in terms of the metal alloy powder, Strnat teaches that the particle size of the metal alloy particles used to form a rare-earth magnet body may vary based on the particular metal alloy and that typically the alloys are used in the form of powders having a particle size between 1 and 50μm and up to 100μm or more based on the particular metal alloy and desired magnetic properties (4:1-54.) Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention to utilize routine experimentation to

determine the optimum particle size for the powder material as taught by Sagawa et al and optimum particle size for the metal alloy powder for the magnet body as taught by Strnat et al based on the particular powder materials utilized for the invention taught by Sagawa et al given that the particle size is a known result-effective variable.

***Response to Arguments***

9. Applicant's arguments filed 3/28/05 have been fully considered but they are not persuasive. The Applicant first argues that the instantly claimed invention recites that "the magnet body material is filled in depressions of the magnet body" however the Examiner notes that the instant invention does not recite that the magnet body material is filled in depressions of the magnet body and further notes that this statement, in itself, is unclear. How can the magnet body material be the material that fills depressions in the magnet body if the magnet body is formed from the same magnet body material? If that were the case, then there wouldn't be any depressions to be filled by the claimed "filling material", would there? In the instantly claimed invention, the magnet body is formed from a mixture of thermosetting resin and rare earth-transition metal powder with a particle size of between 20 and 300 microns, while the filling material has a particle size of between 0.1 and 15 microns, and hence are not the same materials. The Applicant next argues that the instantly claimed filling material is fixed when the powdered thermosetting resin mixed therewith is cured and that in contrast, Sagawa discloses that the resin layer protrudes into minute concavities of the parts and achieves an anchoring effect. However, the Examiner notes that Sagawa clearly teaches, as recited above, that the **powder material and resin are forced into the pores of the resin-bonded magnet, thereby effectively sealing the pores on the surface of the magnet and providing an improved corrosion resistant surface**

**coating** and that the resin binds the powder layer to the work piece, hence "fixing" the powder material or filling material to the magnet body. The Examiner further notes that product-by-process claims are not limited to the manipulations of the recited steps, only the structure implied by the steps. "Even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior art product was made by a different process." In re Thorpe, 227 USPQ 964,966 (Fed. Cir. 1985.) Hence, though Sagawa may teach that the resin layer protrudes into minute concavities of the work piece or that the ball milling is conducted after forming the resin layer, the Examiner notes that the instant invention as recited does not appear to be any different, structurally or materially, from the invention taught by the prior art.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Monique R Jackson whose telephone number is 571-272-1508. The examiner can normally be reached on Mondays-Thursdays, 8:00AM-4:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Carol Chaney can be reached on 571-272-1284. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Monique R. Jackson
Primary Examiner
Technology Center 1700
June 21, 2005